Trust in African Villages

Experimental Evidence from Rural Sierra Leone

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Abstract

We study the correlates of trust and trustworthiness for a population of African smallholder farmers. Using experimental and survey data from 1289 subjects in 86 communities in Sierra Leone, we find that the number of tokens sent in a trust game is smaller than amounts typically sent in other contexts. Levels of trustworthiness, as measured by the number of tokens sent back in the trust game, are comparable. We also document that trust and trustworthiness are correlated with certain social preferences, beliefs, and village context variables. This calls into question what is exactly measured by the trust game.

Key words: Trust, Trustworthiness, behavioral experiment, Sierra Leone, Africa.

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1. Introduction

Gambetta (2000) writes that "*when we say we trust somebody or that somebody is trustworthy, we implicitly mean that the probability that he will perform an action that is beneficial (…) is high enough for us to consider engaging in some form of cooperation with him*." Trust, in other words, reflects expectations about the behavior of others. Echoing this perspective, Mayer et al. (1995) define trust as "*the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.*" The expectation of fair behavior by others implies trustors may willingly expose themselves to the risk of bad behavior by the other party– think of defaulting on loans or supplying bad quality goods. Trust therefore permits "riskier situations." One might argue that exposing oneself to such risk can potentially yield higher payoffs. For example, net payoffs from transacting might go up because of lower transaction costs, or simply because transactions are possible over a broader range of actions.

Economic work indeed suggests a positive correlation between trust levels and economic performance (e.g. Knack and Keefer 1997). In the words of Nobel laureate Kenneth Arrow; "*Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence*" (Arrow, 1972: 357). For trade to flourish, enabling modes of exchange extending beyond simple barter or cash-and-carry trade, moral obligations of fairness and reciprocity should extend to anonymous others – not just kith and kin. In other words, generalized morality and trust should develop and spread (e.g., Platteau 1994, Fafchamps 2011, Tu and Bulte 2011). But what are the determinants of trust and trustworthiness? This question has emerged as an important research topic in the social sciences.

The literature contains various conjectures and suggestions regarding the determinants (and consequences) of trust and trustworthiness. A full treatise is beyond the scope of this chapter, but we will discuss some important insights, focusing on the three key determinants identified in the literature: (i) beliefs and perceptions, (ii) individual characteristics and preferences, and (iii) context. For example, Mayer et al. (1995) argue that trust amounts to one's perception of the trustworthiness of one's

partner, and therefore depends on the assessment of the ability, integrity and benevolence of others. Trust levels are therefore specific at the transaction level. In contrast, Delhey and Newton (2003) distinguish between trust as a personal and societal trait. At the level of individuals, trust may be a stable personality trait (perhaps acquired at young age), or a trait reflecting the history of interaction with others. Instead, societal theories of trust are based on the structure of a society, including how individuals are linked in various networks. Other community factors affecting (average) trust levels may be community size (smaller communities tend to be more trusting) and wealth, the incidence of violence, or the quality of institutions. Focusing on the composition of the sample population, Fehr and Schmidt (1999) propose that trust can emerge and persist (in experimental games) because of the presence of sufficient inequity averse players. Inequity aversion implies that non-cooperation ceases to be the dominant strategy, and trusting behavior can emerge as an equilibrium outcome.

In this chapter we report experimental and survey data for a sample of African smallholders. Specifically, we visited a large number of villages in Eastern Sierra Leone and organized a trust game in each village. The study site is a remote part of the country, and one of the poorest regions in the world. It was also ravaged by a protracted civil war (between 1991 and 2002) which pitted rural villagers against each other, and in more recent times – after the collection of our data – by an ebola epidemic. Formal state intuitions are largely absent and most village exchange takes the form of repeated, personalized interaction, often-times embodied in kinship ties or patronage relations (see Richards 1986). Community-level activities, including the organization of public goods projects and conflict settlement, are governed by local institutions supported by strong social norms of cooperation. The predominant occupation is farming, and many villagers are engaged in labor-exchanging arrangements based on reciprocity (e.g., Cartier and Bürge 2011). Understanding the determinants of trust in these communities is an essential starting point for effective policy making to foster post-conflict and post-ebola reconstruction and development.

In this chapter we empirically investigate the correlations between trust (and trustworthiness) on the one hand, and individual characteristics, beliefs and village context on the other for West African smallholders. We report outcomes for this non-WEIRD (Western, Educated, Industrialized, Rich, and Democratic) sample of

respondents, and contrast measured trust to trust levels as reported in the existing literature. We also probe the key correlates of trust and trustworthiness, and ask whether these variables are correlated with individual characteristics (age, gender, income), preferences (whether a respondent is generous, inequality averse or selfish), specific shocks (resulting from the weather or war time violence), and village-level variables or "local context" (institutional quality, economic inequality, migrants population and beliefs).

This chapter is organized as follows. In section 2 we introduce the two main methodological challenges researchers in this domain are confronted with, and discuss how these challenges are important for the interpretation of our results. In section 3 we introduce our subject pool, describe our data, and introduce our (simple) empirical strategy. Section 4 presents the main regression results, and section 5 concludes.

2. Methodological challenges

The literature on the determinants of trust and trustworthiness struggles with several challenges. Two leading challenges involve the measurement of trust and trustworthiness, and untangling complex webs of correlations to arrive at evidence of causal effects. The latter issue emerges as a concern because, in a regression framework, trust might emerge both as a dependent and explanatory variable. Theory suggests trust evolves in response to various factors, but in turn (via its effect on behavior) may also co-determine the evolution of these same factors. For example, market integration and associated "learning" might enable the building of trust (as argued by Heinrich et al. 2010), but accumulating trust in turn facilitates trade. Similarly, higher incomes may enable people to behave in a more trusting manner (i.e., accept greater vulnerability to the actions of others), but trusting behavior may simultaneously be rewarded by rising incomes.[1] To untangle the causal effect of context-factors on the dynamics of trust and trustworthiness implies the analyst may resort to econometric approaches – for example, using so-called instrumental variables to identify exogenous variation in the factors of interest – or to a (natural) experimental approach, where exogenous variation is implied by design or exogenous shocks. In this chapter we are less ambitious and seek to establish correlations

[1] Moreover, "other factors," for example related to culture, might affect both trust and its apparent correlates. Failure to control for such "other factors" in empirical analyses implies that the correlation between trust and its correlates need not be indicative of a causal relation (omitted variables problem).

between measured trust and various variables of interest. Future work should reveal whether these correlations imply causal relationships, or not.

The second challenge facing empiricists working on trust concerns the issue of measurement. Trust is not observed directly, but may be gauged by either a (standard) survey question or by observing one's behavior in a choice setting. Two measurement approaches dominate the literature. The first common measure of (generalized) trust is based on the well-known World Value Survey (WVS) question: "*generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?*" The validity of this approach has been scrutinized, and recent work by Sapienza et al (2013) concludes that trust thus measured indeed captures beliefs about the intentions and behavior of others.

The second common trust measure is based on behavior in the so-called trust game. In this (lab-style) experiment, a trustor receives an endowment (X) of tokens (or money) which she can either keep for herself or (partly) transfer part (Z) to an anonymous partner (e.g. a co-villager). The amount transferred is multiplied by three, so the other party receives $3Z$. The receiver, in turn, can return any amount ($Y \leq 3Z$) to the sender. After the experiment, the trustor has earned X-Z+Y tokens (ultimately convertible into a monetary amount) and the receiver has earned $3Z–Y$. One "socially optimal" outcome is for the trustor to send the entire amount (X), which is subsequently split by the receiver. In this case both players end up with $1.5X$. But in the absence of sufficient trust, the trustor is likely to send nothing. The amount sent in a trust game, Z, is typically interpreted as a measure of trust, and the percentage returned, $Y/3Z$, is typically interpreted as a measure of trustworthiness. The experimental approach to gauging trust and trustworthiness is more complex (and costly) than the survey-based method, but has the clear advantage that it is incentive compatible. That is; participants in the experiments have a (monetary) incentive to act in accordance with their true beliefs and expectations rather than, say, provide (politically) correct answers to hypothetical questions. A potential disadvantage of measuring trust via trust games is that sending behavior in the game might reflect other preferences than simply trust, including altruism, inequality-aversion, or risk preferences (e.g. Karlan 2005, Sapienza et al. 2013). Possibly, triangulation based on combining behavior in multiple games can help to isolate trust from such potentially confounding effects.

[TABLE 1]

In Table 1 we provide an overview of amounts sent and returned in earlier trust games. Across these studies, trust appears relatively high: on average, respondents send 50% of their endowment. However, the studies also display considerable variation, suggesting that context (and perhaps respondent characteristics) may matter. On average, receivers send back 37%, so that the investment of the trustor just pays off (on average). Again, there is variation in return rates, and several studies find that transferring money does not pay off for the sender.

3. Setting, data and estimation strategy

We use data from respondents in 86 communities in rural Sierra Leone surrounding the Gola Rainforest National Park (GRNP). In each village participants (mainly household heads) were randomly selected to participate in a series of behavioral experiments (including a trust game) and a short survey during the Fall of 2011. In total, 1289 people participated in both the trust game and survey. Table 2 summarises descriptive data for our respondents.

[TABLE 2]

Our main variables of interest, trust and trustworthiness, are based on the classical trust game proposed by Berg et al (1995). Our group of participants was divided (randomly) in senders and receivers. The identities of the sender and receiver are never revealed. The senders receive an endowment of 1000 Leones (about €0.17) in the form of 10 tokens – a small amount but nevertheless a salient incentive in this cash-stricken part of Sierra Leone. As mentioned above, senders are invited to send part of this endowment to an anonymous receiver from their community, and informed that the experimenter will triple any amount they choose to send. The receiver can send any amount back to the original sender, as long as this amount does not exceed the amount that was received. Our measure for trust is the percentage of tokens shared by the sender. On average, respondents shared 32% (SD 23) of their endowment (see Figure 1a). This is on the lower end of the values reported in the studies above (Table 1). Our measure of trustworthiness is the fraction of tokens receivers send back (see Figure 1b). On average participants returned 33% (SD 17), which matches earlier findings.

[FIGURE 1]

We distinguish between three types of explanatory variables to explain the variation in trust and trustworthiness that we observe in our sample. First, we collected data on a range of individual characteristics, including age, gender and farm size (a proxy for income). In addition, subjects were asked about their beliefs and expectations regarding the behaviour of co-villagers. Specifically, we asked three questions (i) "*Do you hide any of your harvest so others won't know you have it?*", (ii) "*If you had a good harvest, how many households in your village would you share with?*" and (iii) "*If you needed food, how many households in your village would share [food] with you?*". On average, about two thirds of our respondents say they hide part of their harvest (64%, SD 48%). The average respondent would share food with about 4 other households and expects to receive food (if asked) from about 3 other households. These data suggest the existence of norms of sharing, which is not surprising in a context characterized by near autarky. However, it is interesting that many individuals seek to evade their sharing obligations if possible.

To proximate social preferences we invited subjects to participate in an allocation game based on Fehr et al. (2008). Participants are asked to make four dichotomous allocation choices, allowing us to classify our respondents into four different "types:" generous, inequality averse, selfish and other. The four allocation choices consist of an egalitarian and non-egalitarian allocation (see appendix Table A1 for choice options). The majority of our respondents are classified as "inequality averse" (42%). About 14% are "generous" and 17% are "selfish." The remaining 27% is classified as "other."

We obtained data on a range of context variables. First, we use survey questions to obtain two proxies for chief quality, or the quality of local governance ("*how often have you asked the chief for help*?" and "*do you trust the chief*?"). We also collected data on the incidence of crop failure in recent years, due to pests or adverse weather conditions. Based on data on farm size, as mentioned above, we computed a Gini coefficient to capture within-village inequality. To complement our vector of context variables, we also administered a village level survey collecting information on the size of the village (in terms of the number of households), and the share of migrants in the village (as a measure of heterogeneity). We use average contributions in a public good game as a proxy for social capital (or social cohesion—the ability to overcome dilemmas). Finally, we have collected village-level data on

access to markets and exposure to conflict during the civil war. The latter variables capture the number of villagers that died during the war (scaled by pre-war village size), and the percentage of people that had to permanently flee from the village. Unfortunately, these market access and conflict data are only available for a subsample of the villages.

Our identification strategy is very simple. We use ordinary least squares (OLS) and regress our measures of trust and trustworthiness on our preferences, beliefs and context variables. Specifically, our main models are:

$$Trust_{ij} = \beta_1 + \beta_2 X_{ij} + \beta_3 B_{ij} + \beta_3 P_{ij} + \beta_4 V_j + \varepsilon_{ij} \quad (1)$$

$$Trustworthiness_{ij} = \beta_1 + \beta_2 X_{ij} + \beta_3 B_{ij} + \beta_4 P_{ij} + \beta_5 V_j + \beta_6 Trust_{ij} + \varepsilon_{ij} \quad (2)$$

Where $Trust_{ij}$ is our measure for trust, or the fraction of tokens sent by player i in village j (i=1,..., 1278, j=1,...,90). $Trusthworthiness_{ij}$ is the fraction of tokens returned by respondent I; X_{ij} is a vector of individual controls; B_{ij} are beliefs; P_{ij} are preferences; and V_j are context variables. We add the percentage sent into the model for trustworthiness to see if the amount sent by the trustor matters. Throughout, standard errors are clustered at the village level and corrected for heteroskedasticity, and estimates are weighted for the probability to be sampled (based on village size).

4. Results

Table 3 presents our main results for the correlates of trust and trustworthiness. Column (1)-(3) reports the OLS results of a model that explains variation in trust. We regress the percentage of tokens sent in the trust game (our measure of trusting behavior) on the individual characteristics, preferences, beliefs and context variables – corresponding to model (1) above. Columns (4)-(6) do the same for trustworthiness. We regress the percentage of tokens returned (our measure capturing trustworthiness Our main specifications are in columns (1) and (4). In columns (2) and (5) we exclude our beliefs variables and in column (3) and (6) we add our proxies for war exposure and market access (restricting our analysis to a subsample of the villages).

[TABLE 3]

We find some interesting correlations. Few of the individual characteristics predict trust or trustworthiness. Trust increases with age, but does not vary with gender or income. The amount returned is not significantly related to any of these variables, except (non-linearly) to age for our regression on the subsample.

Turning to our preference variables, we first observe that pro-social types do not seem to send or return more tokens (relative to the omitted category of "other types"). We find that selfish individuals send and return less than others (though this finding is not significant in all specifications). In addition, inequality-averse individuals tend to return less.[2] This makes sense. On average, senders send one third of their endowment and receivers return the same amount (or 33% of the amount received, after tripling by the experimenter). This leaves the sender better off than the receiver: net payoffs for the former are X and net payoffs for the latter are only $0.66X$. Inequality-averse individuals will therefore return less than the average player, in an effort to restore equality. However, the finding that selfishness and inequality aversion are correlated with the number of tokens sent implies that the game presumably does not capture trust in the narrow sense – defined as the expectation that one will not be exploited by the bad behavior of others. Instead, the trust games picks up a range of preferences (see also Sapienza et al. 2013).

Next, we turn to beliefs about the intentions of behavior of others. Note that we did *not* explicitly ask about expectations with respect to the behavior of the receiver in the trust game (which would have been the closest proxy of trust according to Gambetta 2000 and Mayer et al. 1995, Sapienza et al. 2013). Instead, we asked respondents about their attitudes and beliefs with respect to (informal) sharing with others in the village. We assume this is related to the quality of social relations, or with social capital, affecting trust and trustworthiness in the experiment. We find, in column (1), that households supporting a larger number of other households in case of need, will send less in a trust game.

We also report the puzzling finding that respondents expecting more support from others share more (as senders), but tend to return *less* (as responders). It is an open question why trusting behavior on the one hand and trustworthiness on the other correlate so differently with sharing behavior in real life. The finding that sharing positively correlates with trusting behavior could indicate that beliefs (or expectations) about fair behavior by others spill over from the village context to the experiment. It could also be consistent with the interpretation that receiving transfers

[2] Note that the latter findings do not enter in a statistically significant way in columns (3) and (6). This may be due to the smaller sample size (reducing power of the test), or could reflect multicollinearity with the conflict and trade variables in these columns. Earlier work (e.g. Cecchi et al. *forthcoming*) indeed suggests that conflict exposure may alter social preferences and behavior.

from peers invites a livelihood strategy that involves investing in social capital (by displaying trusting behavior). But this finding is not very robust, as it does not appear significantly in column (3). Why are more optimistic beliefs about other households' generosity associated with lower levels of own trustworthiness (column 6)? This could indicate that while people "on the receiving end" of informal sharing networks might invest in social relations (via trusting behavior), they are not used to repay their "debts." These conjectures are food for thought, suggesting that beliefs regarding behavior of others are correlated with behavioral trust – perhaps social capital is a more important correlate of behavioral trust than social preferences.

Perhaps surprisingly, very few of our context variables are correlated with trust or trustworthiness. For example, local governance is not correlated with amounts sent or returned, and neither with the share of migrants in the village, market access, or exposure to crop shocks. In villages with higher levels of social capital (as measured by the average contribution to a public game), respondents tend to trust more, but trustworthiness is unaffected. We also observe that amounts returned are higher in unequal villages, in larger villages, and in villages that suffered exposure to conflict (if conflict caused permanent fleeing from the village). Note that the coefficients are large (but that in some cases the standard errors are even larger). In the absence of exogenous variation in our study, however, it is impossible to infer causal effects from the correlations presented in Table 3. We hope future research will allow us to zoom in on the most promising relationships (such as between inequality and trustworthiness).

5. Conclusions

Understanding the determinants and consequences of social capital is becoming increasingly important in economics. A recent shift has moved this field of enquiry from the lab to field contexts, as analysts increasingly seek to understand behavior in the "real world." In this chapter, we look at the determinants of trust and trustworthiness in a large sample of rural African villages, in eastern Sierra Leone. We organized a series of trust games, and empirically investigate the correlations between behavior in the game (our proxies of trust and trustworthiness) and certain individual characteristics, beliefs and measures of the village context.

This study is exploratory and limited in focus and scope. Due to the nature of our data and sample, we only report correlations and abstain from any causal claims. We do believe the results are nonetheless interesting, if only because this is one of the first studies to measure trust, social preferences and expectations of individuals in an African setting (certainly on such a large scale). Our results suggest that behavior in the game reflects expectations with respect to the (fair, or not-so fair) behavior of others. In addition to this issue, which arguably is at the heart of the concept "trust", we find that social preferences may also matter. In other words, and echoing insights from Sapienza et al. (2013) for a completely distinct sample of respondents, we believe the trust game does not cleanly measure trust as properly understood.

On average, we find that our sample of respondents send slightly less than respondents in earlier studies. While trust may be lower, we observe that trustworthiness is comparable to other studies.

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FIGURES

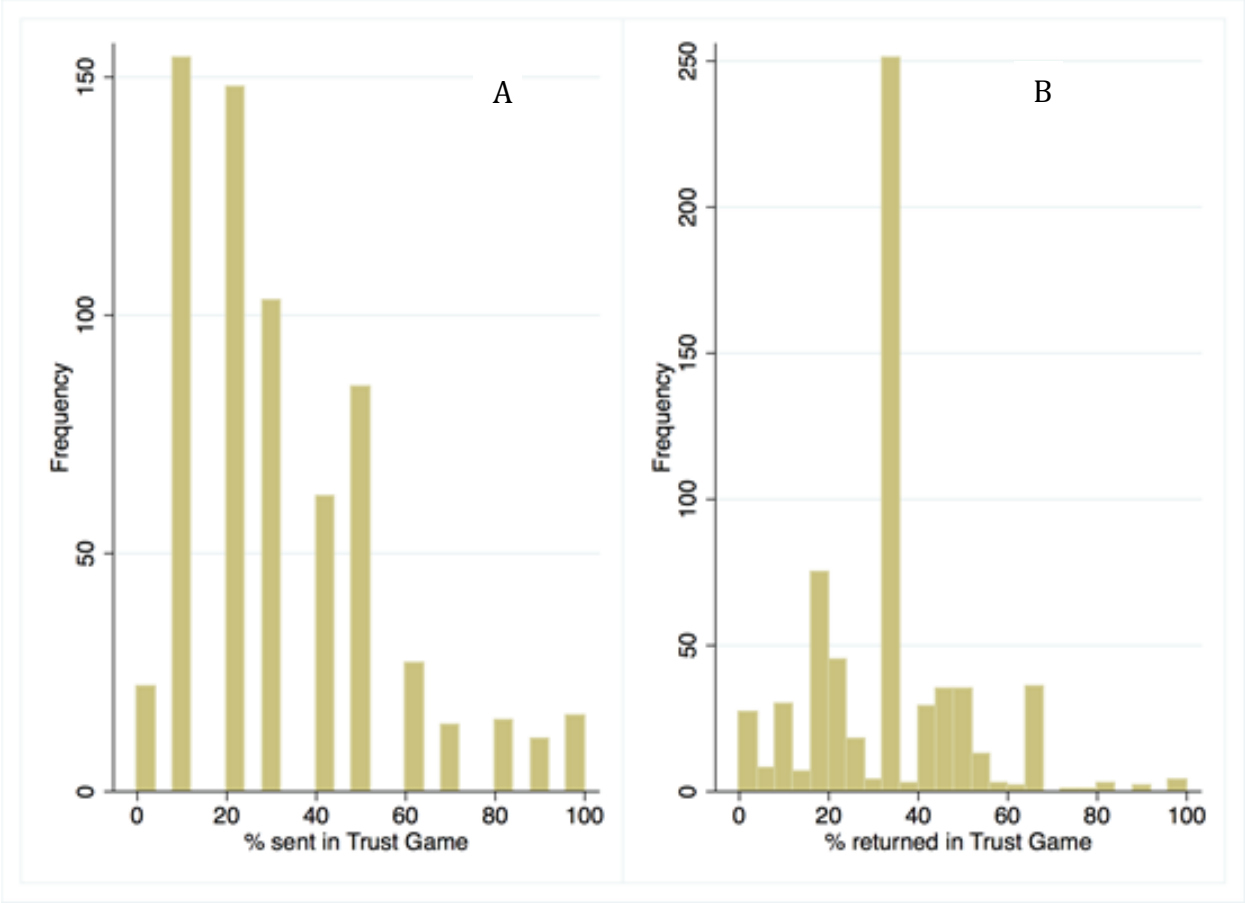

Figure 1: Distribution of contributions in Trust Game

TABLES

Table 1 Overview of findings in studies on trust

	Bouma, Bulte and Soest (2008)	Cox (2004)	Schechter (2007)	Buchan, Croson and Solnick (2008)	Burks, Carpenter and Verhoogen (2003)	Cochard, Nguyen Van and Willinger (2004)	Holm and Danielson (2005)	Johnson and Mislin (2011)
Participants	Indian Rural Households	US students	Paraguayan rural households	US students	US students	Unclear	Tanzanian and Swedish students	*Meta-Analysis*
Sample Size	92 senders	32 senders	188 senders	39 senders	44 senders	20 senders	100 Tanzanian, 55 Swedish	137 studies
% sent nothing	13%	19%	7%	-	-	-	-	-
% of endowment sent to other	49%	60%	46%	68%	65%	50%	Tanzania: 53% Sweden: 51%	50%
% of received tokens returned	29%	27%	43%	28%	40%	38%	Tanzania: 37% Sweden: 35%	37%
Return on investment (received back/sent)	0.87	0.82	1.3	0.84	1.31	1.14	Tanzania: 1.11 Sweden: 1.05	1.11

Table 2 Summary statistics

Variable	Number of Villages	Obs	Mean	Std.Dev.	Min	Max
% sent in Trust Game	86	657	31.52	22.67	0	100
% returned in Trust Game	86	632	32.73	16.99	0	100
Age	86	1279	38.77	14.23	13	97
Gender (Male=1)	86	1289	0.566	0.496	0	1
Farm Size	86	1286	5	5.333	0	60
Social Type, 1=Generous	86	1289	0.137	0.343	0	1
Social Type, 1=Inequality-Averse	86	1289	0.420	0.494	0	1
Social Type, 1=Selfish	86	1289	0.175	0.380	0	1
Social Type, 1=Other	86	1289	0.268	0.443	0	1
Do you hide your harvest (Yes=1)	86	1288	0.648	0.478	0	1
With how many household do you share your harvest?	86	1288	4.117	3.333	0	60
How many households share their harvest with you?	86	1288	3.130	2.496	0	30
# times asked chief for help, village average	86	1289	1.590	0.809	0	4.750
Do you trust the Chief? (Yes=1), village average	86	1289	0.917	0.103	0.381	1
Presence of crop shocks in previous year: rain, drought or crop disease	71	1051	1.805	0.573	0	3
Gini Index (Farm Size)	86	1289	0.402	0.0844	0.118	0.636
Percentage of migrants in village, 2013 data	86	1289	0.118	0.123	0	1
Donation in Public Good Game, village average	85	1273	9.359	3.103	2.642	17.13
Village Size	86	1289	45.29	28.57	4	148
Fraction of People died in the war	63	932	0.150	0.121	0.0231	0.920
Fraction of People that fled in the war and did not return	66	980	0.336	0.213	0.0357	0.940
Distance to main market town (km)	63	942	8.037	4.961	1	23

Table 3 Origins of Experimental Trust and Trustworthiness

	(1) Trust	(2) Trust	(3) Trust	(4) Trustworthiness	(5) Trustworthiness	(6) Trustworthiness
Individual Characteristics						
Age	0.505*	0.468*	0.534*	0.343	0.383	0.652**
	(0.255)	(0.261)	(0.287)	(0.269)	(0.271)	(0.300)
Age^2	-0.004	-0.003	-0.003	-0.003	-0.004	-0.007**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Gender (Male=1)	2.603	2.244	1.998	-0.408	-0.343	2.126
	(2.348)	(2.258)	(2.042)	(2.292)	(2.295)	(2.650)
Farm Size	-0.174	-0.120	-0.067	-0.119	-0.163	0.070
	(0.278)	(0.282)	(0.275)	(0.185)	(0.185)	(0.294)
Social Preferences						
Social Type, 1=Generous	1.037	1.206	-1.830	-2.554	-2.810	-0.643
	(3.055)	(3.226)	(3.767)	(2.898)	(2.934)	(3.310)
Social Type, 1=Inequality-Averse	-0.097	0.199	-1.629	-4.759*	-4.573*	-3.813
	(2.374)	(2.456)	(2.491)	(2.389)	(2.362)	(2.985)
Social Type, 1=Selfish	-5.314	-5.462*	-1.188	-6.729*	-6.830*	-2.291
	(3.256)	(2.955)	(2.943)	(3.385)	(3.452)	(4.305)
Beliefs						
Do you hide your harvest (Yes=1)	-2.652		2.090	-0.518		-1.730
	(2.196)		(2.272)	(1.550)		(1.842)
With how many households do you share your harvest?	-1.069**		-1.031	0.043		0.276
	(0.529)		(0.674)	(0.252)		(0.269)
How many households share their harvest with you?	1.501**		0.610	-0.725**		-0.822*
	(0.636)		(0.686)	(0.343)		(0.414)
Context						
# times asked chief for help, village average	-4.045	-3.907	2.262	-2.296	-2.584	-2.584
	(2.785)	(2.830)	(2.990)	(1.682)	(1.723)	(2.044)
Do you trust the Chief? (Yes=1), village average	23.497	24.697	-3.042	1.049	1.039	14.313
	(19.326)	(19.843)	(24.451)	(11.043)	(11.068)	(11.575)
Crop shocks in previous year	-2.994	-2.996	-3.164	-1.651	-1.722	-3.092
	(4.376)	(4.378)	(4.867)	(2.411)	(2.384)	(2.600)
Gini Index (Farm Size)	21.426	19.497	54.338*	22.616*	23.044*	23.152*
	(23.566)	(23.658)	(28.445)	(11.940)	(11.909)	(11.943)
Percentage of migrants in village	16.464	20.836	1.499	2.442	1.570	-1.836
	(21.177)	(22.231)	(40.552)	(9.526)	(9.705)	(14.413)
Donation in Public Good Game, village average	1.198*	1.170*	1.078	-0.041	-0.053	0.127
	(0.658)	(0.671)	(0.742)	(0.383)	(0.373)	(0.320)
Village Size	0.016	0.020	0.134	0.082**	0.087**	0.054
	(0.043)	(0.041)	(0.088)	(0.033)	(0.033)	(0.060)
Fraction of People died in the war			3.846			-19.525
			(39.515)			(17.761)
Fraction of People that fled			22.851			9.298*
			(15.085)			(5.325)
Distance to main market town (km)			0.144			0.013
			(0.499)			(0.274)

% sent in Trust Game				-0.003	-0.001	0.058
				(0.063)	(0.060)	(0.070)
Constant	-12.604	-14.037	-26.934	24.632	21.924	3.365
	(18.968)	(20.363)	(24.156)	(15.215)	(15.149)	(14.470)
Observations	532	533	341	507	507	324

Trust is measured as the % of tokens sent in the Trust Game. Trustworthiness is measured as the % of tokens returned in the Trust Game. Robust standard errors in parentheses clustered at village level. Weighted for probability to be sampled (based on village size). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. For variable definitions, refer to the Appendix.

APPENDIX

Table A1: Overview of the allocation games

	Game	Allocation A		Allocation B	
		Self	Other	Self	Other
(1)	Costless Sharing	1000	1000	1000	0
(2)	Costly Sharing	1000	1000	2000	0
(3)	Costless Envy	1000	1000	1000	2000
(4)	Costly Envy	1000	1000	2000	3000

Data definitions

- *% sent in Trust Game.* An individual level measure for Trust game senders. Number of tokens sent/Total tokens (10) *100.
- *% returned in Trust Game.* An individual level measure for trust game receivers. Number of tokens returned/Tokens received by sender *100
- *Age.* Individual level measure. Self-reported age measured in years.
- *Gender (Male=1).* Individual level dummy. 1 means male and 0 female.
  Farm Size. Individual measure for farm size. Measured by asking how many bushels of rice could be sown on the farm. 1 bushel of rice equals about 1 hectare.
  *Social Type, 1=Generous; Social Type, 1=Inequality-Averse; Social Type, 1=Selfis.*Individual level measure. Takes value of 1 of a person can be classified as generous (else) (based on Fehr, 2007). *Social Type, 1=Other.* Individual level measure. All participants that could not be specified using the above types were classified as other.
- *# times asked chief for help, village average.* Village level measure. Village average calculated from the number of times people in a village asked the chief for help.
- *Do you trust the Chief? (Yes=1), village average.* Village level measure. Village average calculated from whether they stated to trust the chief, with 1 being Yes and 0 being No.
- *Presence of crop shocks in previous year: rain, drought or crop disease.* Village level Measure. Sum of answers to three questions from village survey if they experienced agricultural shocks in the previous year (high rain, drought or crop disease).
- *Gini Index (Farm Size).* Village level measure. Gini index calculated from variation of farm size in a village. A value of 1 represents complete inequality (one person has all the land) and a value of 0 represents complete equality (everyone has equal land).
  Percentage of migrants in village, 2013 data. Village level measure. The percentage of migrants in a village, based on a 2013 survey. Calculated from the percentage of respondents that said they were a ‘stranger’ in a random draw from the village.

- *Donation in Public Good Game, village average.* Village level measure. The average amount that was donated over several rounds in a public goods game. Public Goods Game participants did not participate in the Trust Game.
- *Village Size.* Village level Measure. The number of heads of household in a village, based on a village census.
- *Do you hide your harvest (Yes=1).* Individual level dummy. Value of 1 means they hide some of their harvest so their neighbours won't know they have it, 0 means they do not.
- *With how many households do you share your harvest?* Individual level measure. The number of households with whom they would share some of their harvest if they had a good harvest.
- *How many households share their harvest with you?* Individual level measure. The number of households that the respondent expects would share with him if he needed it.
- *Fraction of People died in the war.* Village level measure. Data from 2010 survey. The number of people that died in the war. We divide this by the size of the village prior to the war. As there was village growth during the war, this value can exceed 1.
- *Fraction of People that fled and did not return in the war.* Village level measure. Data from 2010 survey. The number of people that fled and did not return during the war. We divide this by the size of the village prior to the war. As there was village growth during the war, this value can exceed 1.
- *Distance to main market town (km).* Village Level Measure. The distance, as the crow flies, to the nearest chiefdom headquarters in km, which is the main market town.